

- E. The scale factor relating two similar figures is 1.8. One side of the larger figure is 12 centimeters. How long is the corresponding side of the smaller figure?

**ACE** Homework starts on page 55.

## 4.3 Developing Strategies for Solving Proportions

**W**hen mathematicians find the same kind of problem occurring often, they look for a systematic method, or algorithm, that can be applied in each case.

So far in this investigation, you have found ways to solve proportions in specific cases with nice numbers. Now you will develop general strategies that will guide you in solving proportions when the numbers are not so nicely related.

### Problem 4.3 Developing Strategies for Solving Proportions

- A.** A jet takes 10 miles to descend 4,000 feet. How many miles does it take for the jet to descend 5,280 feet?
1. Set up two different proportions that can be solved to answer the question.
  2. Solve one of your proportions by whatever method you choose. Check to see that your answer makes sense.
- B.** Jack works at a restaurant and eats one enchilada for lunch every day that he works. He figures that he ate 240 enchiladas last year. Three enchiladas have a total of 705 Calories. How many Calories did he take in last year from eating enchiladas?
1. Set up a proportion that can be solved to answer the question.
  2. Solve your proportion. Check to see that your answer makes sense.
  3. Describe each step in your solution strategy.
  4. Can your strategy be used to solve any proportion? Explain.
  5. How many Calories did he eat for lunch each working day?

- C.** In Pinecrest Middle School, there are 58 sixth-graders, 76 seventh-graders, and 38 eighth-graders. The school council is made up of 35 students who are chosen to represent all three grades fairly.
1. Write fractions to represent the part of the school population that is in each grade.
  2. Use these fractions to write and solve proportions that will help you determine a fair number of students to represent each grade on the school council. Explain.
  3. How would the number of students from each grade change if the number of members of the school council were increased to 37? Explain your reasoning.
- D.** Ms. Spencer needs 150 graphing calculators for her math students. Her budget allows \$5,000 for calculators. She needs to know if she can buy what she needs at the discount store where calculators are on sale at 8 for \$284.

She writes the following statement:

$$\frac{8}{284} = \frac{150}{x} \quad \text{or} \quad \frac{8}{284} = 150 \div x$$

1. Use fact-family relationships to rewrite the proportion so that it is easier to find  $x$ .
2. Solve the proportion, recording and explaining each of your steps.
3. Is your method a general method that can be used to solve any proportion? Explain.

**ACE** Homework starts on page 55.